Remarks

Claims 1-7, 10-13, 16, 19, and 21-27 are presented for the Examiner's review and consideration. Claim 1, 4, 21, 24, and 25 have been amended Applicants believe the claim amendments and remarks herein serve to clarify the present invention and are independent of patentability. No new matter has been added.

35 U.S.C. §101 Rejections

Claims 1-7, 10-13, 16, 19, and 21-27 were rejected under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter.

Specifically, the Examiner stated that the claims are drawn to "a method for computing a point in a phase space" and "a method for computing a curve in a phase space," and as such the claimed invention does not fall within at least one of the four categories of patent eligible subject matter recited in 35 U.S.C. 101. The Examiner further stated that the claimed invention is directed to a judicial exception to 35 U.S.C. 101 (i.e., an abstract idea, natural phenomenon, or law of nation) and is not directed to a practical application of such judicial exception because the claims do not require any physical transformation and the invention as claimed does not produce a useful, concrete, and tangible result.

Claims 1 and 21 have been amend to recite "A method for displaying" and now include a step for displaying. Applicants submit that claims 1 and 21 as amended are directed to a new and useful process as governed by Section 101. Furthermore, claims 1 and 21 provide a useful, concrete, and tangible resulting, namely, "displaying the point in phase space" and "displaying the point of the curve in phase space"

As such, Applicants submit that claims 1 and 21 are directed to statutory subject matter. As claims 2-7, 10-13, 16,19and 22 depend from claims 1 and 21, these claim also are directed to statutory subject matter.

With regard to claim 23-27, Applicants submit that these claims are also directed to statutory subject matter. Specifically, claims 23, 24, and 27 are directed towards computer systems, and claims 25 and 26 are directed towards computer readable media encoded with computer programs.

In light of the foregoing, Applicants request reconsideration and withdrawal of the Section 101 rejections.

35 U.S.C. §112 Rejections

Claims 1-7, 10-13, 16, 19, and 21-27 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Specifically, the Examiner stated that claims 1, 21, 23, and 25 recite the limitation "calculating a difference between a first data sample and a last data sample of the first sequence." The Examiner further stated that it is not clear as to what the "difference" is being calculated.

In response, Applicants have amended claims 1, 21, 23, and 25 to clarify these claims. Accordingly, Applicants submit that the claims particularly point out and distinctly claim the subject matter which Applicants regards as the invention. In light of the foregoing, Applicants request reconsideration and withdrawal of the Section 112 rejections.

35 U.S.C. §103 Rejections

Claims 1-7, 10-13, 16, 19, and 21-27 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,195,103 to Stewart ("Stewart"). In response, Applicants respectfully submit that this rejection should be withdrawn.

Stewart discloses a computer software system for displaying time series data as a color image in which one axis of said image represents sequential time and a second axis represents an offset in time from the time represented in said first axis. (Abstract).

The method of Stewart comprises the steps of converting time series data to a series of fluctuations by subtracting from each value the value at the immediately preceding time and storing all the difference values; computing the distance between patterns of fluctuations for every pair of times; converting the distances to colors; and applying each color to the appropriate small square in the display. (Col. 3, lns. 31-38). The resulting display, using either a computer monitor or a color printer, is referred to as a volatility plot. (Col. 3, lns. 42-43).

As such, Stewart discloses a method for color coding time series data. The time series

data is converted into a series of fluctuations. The distance between patterns of fluctuations for every pair of times is calculated, where the distance is converted to a color for display. Accordingly, a plurality of distances are calculated and plotted in color codes on the volatility plot. However, Stewart fails to disclose the calculation of a volatility, instead labeling the plot of color coded distances as a volatility plot.

In contrast, the present invention discloses a method and a computer system for computing and displaying a phase space relating the performance of a variable to its volatility in an intuitive and interactive way. (Abstract). An object of the invention is to provide an improved method and computer system for computing and displaying a point and/or a curve in a phase space relating the development of an observed variable to its volatility. (Page 2, lns. 17-19).

In step 1 a sequence S of data samples p_0 to p_N is inputted. (Page 9, lns. 16-17). In the example considered here the data samples belong to a stock p and cover a period T. (Page 9, lns. 17-19). In step 2 the time interval of the time period T between t_0 and t_1 is inputted to specify the sub-sequence s of the data samples to be analyzed. (Page 10, lns. 12-13). In step 4 the volatility is calculated in accordance with the following formula:

$$\overline{\sigma_{t_0,t_1}}(p) = \frac{1}{\sqrt{t_1 - t_0 - 1}} \sqrt{\sum_{i=t_0}^{t_1-1} \overline{(R_{t_0,t_1}(p) - R_{t,t+1}(p))}^2} \qquad (1)$$

where $R_{t,t+1}(p)$ is expressive of the difference of two consecutive data samples pt and pt+1, i.e. . (Page 10, lns. 17-22). (Page 10, lns. 17-22).

As such, the present invention discloses the calculation of a single volatility for a time period, in accordance with equation 1. Furthermore, and as recited in the claims, the present invention determines a first and a second coordinate value of a point in phase space based on the volatility and the difference, and displaying the point in phase space.

As noted above, Stewart fails to disclose the calculation of a volatility, instead labeling the plot of color coded distances as a volatility plot. Additionally, Stewart displays a color coded plot of the differences in fluctuations, not coordinate values.

The Examiner further noted that Stewart does not explicitly teach the step of determining

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a first and second coordinate value of a point in a phase space based on the volatility and the difference. However, the Examiner stated that Caccavale teaches the step of determining a first and second coordinate value of a point in phase space based on the volatility and differences and that both Stewart and Caccavale are concerned with displaying time series data to the user, and it therefore would have been obvious to one of ordinary skill in the art at the time the invention to modify Stewart to include the teaching of Caccavale.

Initially, Applicants note that Stewart is related a computer software system for displaying time series data as a color image in which one axis of said image represents sequential time and a second axis represents an offset in time from the time represented in said first axis. (Abstract). In contrast, Caccavale is directed to a system and method for improving the performance level of a network server by dynamically adjusting (i.e. tuning) the parameters of the server in response to changes in the workload of the server. (Col. 1, lns. 11-15). As such, Stewart and Caccavale are directed towards different subject matter, and there is no suggestion or motivation to combine the references.

Additionally, as noted above, Stewart is directed to displaying time series data as a color image, and is unrelated to determining or displaying coordinate values. As such, the step of determining a first and second coordinate value of a point in phase space based on the volatility and differences and displaying the point in phase space is against the teachings of Stewart.

In light of the foregoing, Applicants submit the claims 1, 21, 23, and 25 are patentable over Stewart and Caccavale. Applicants further submit that the dependent claims are patentable at least for the same reasons. Accordingly, Applicants request reconsideration and withdrawal of the Section 103 rejection.
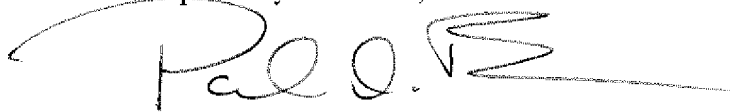
Conclusion

In light of the foregoing, this application is now in condition for allowance, or at least in better form for appeal, and early passage of this case to issue is respectfully requested. If any questions remain regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

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No fee is believed due. However, please charge any additional fees (or credit any overpayments of fees) to the Deposit Account of the undersigned, Account No. 500601 (Docket No. 739-X01-005).

Respectfully submitted,

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